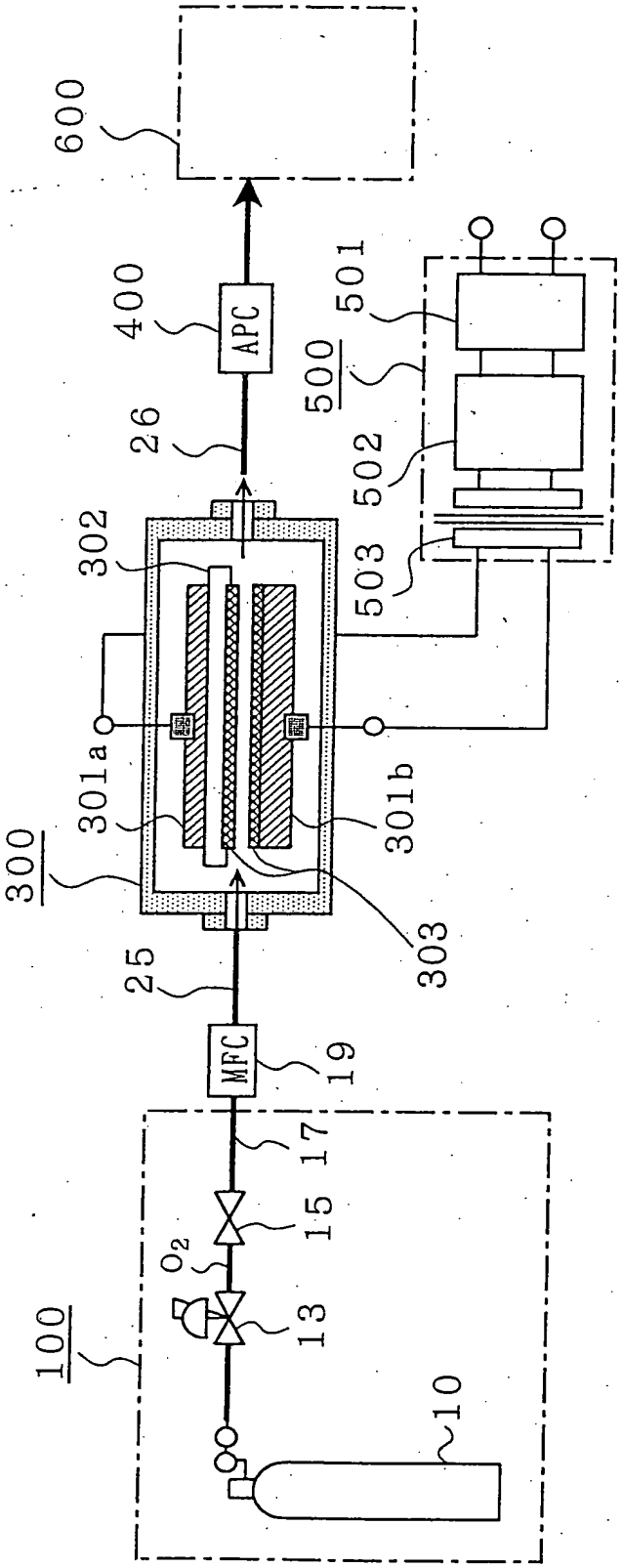

600
400
APC
501
500
26
502
302
503
301a
301b
300
303
25
MFC
19
17
15
O_2
13
100
10

Fig. 1

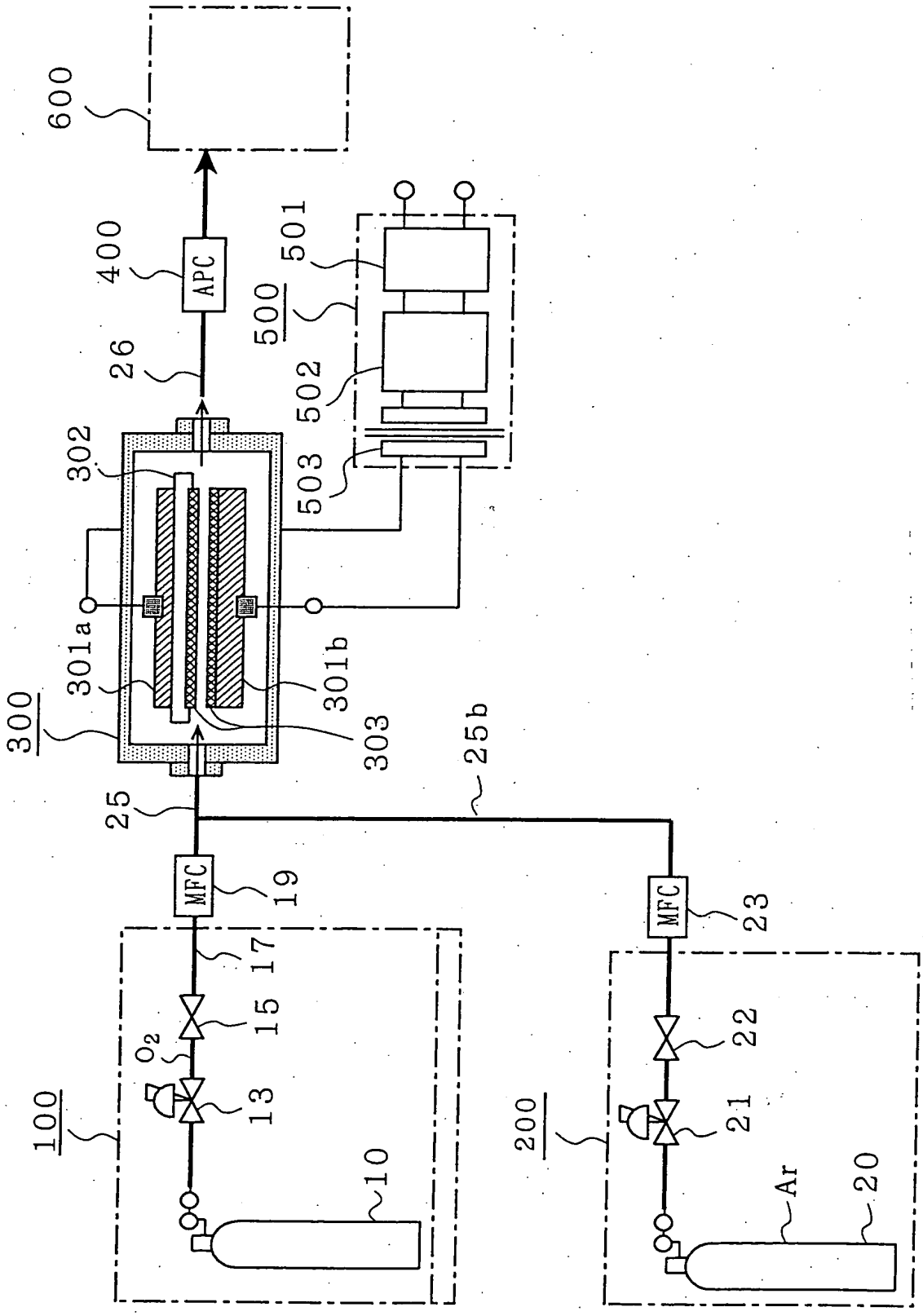

600
400
APC
26
302
300
301a
301b
303
25
25b
MFC
19
MFC
23
17
15
13
O_2
100
10
22
21
200
Ar
20
500
501
502
503

Fig. 2

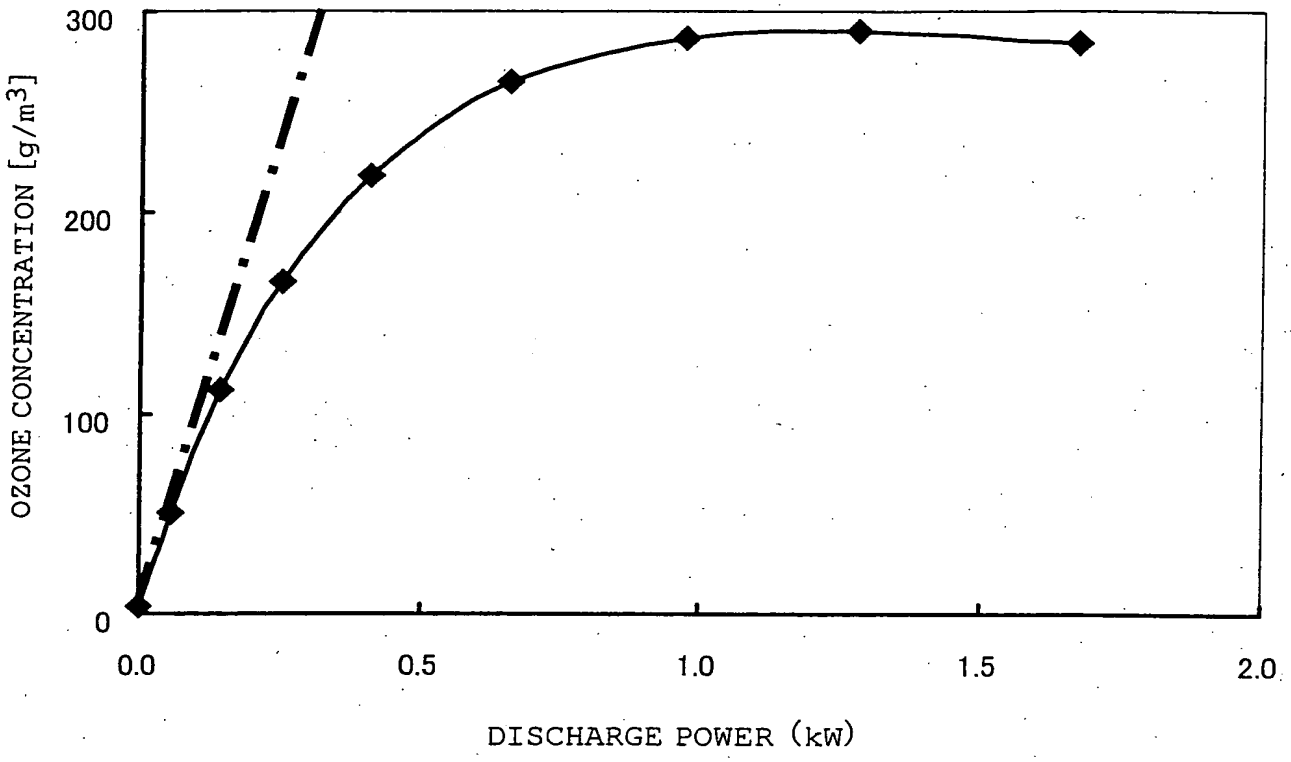

300
200
100
0
OZONE CONCENTRATION [g/m3]
0.0
0.5
1.0
1.5
2.0
DISCHARGE POWER (kW)

Fig. 3

10/538780

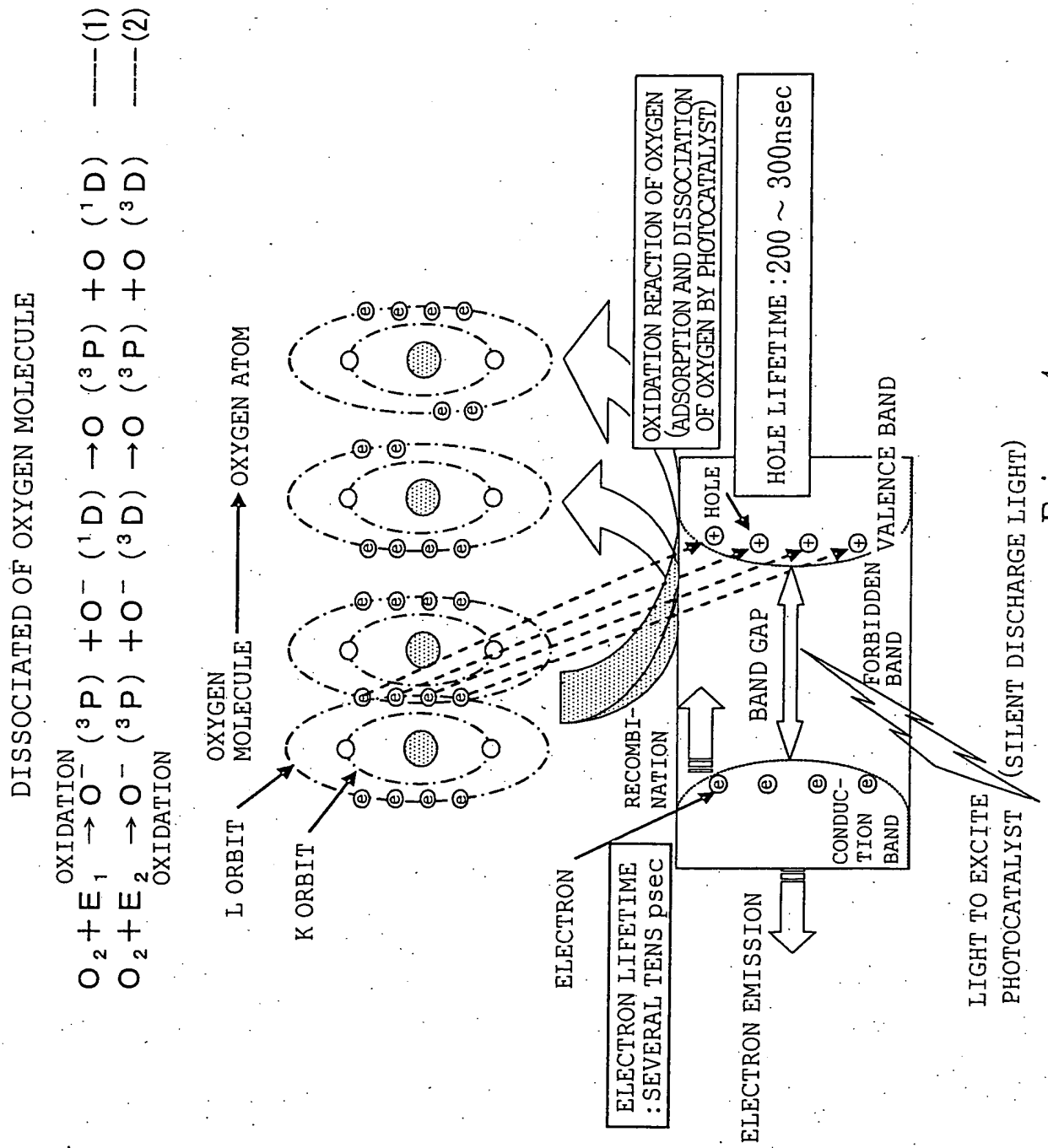


Fig. 4

10/538780

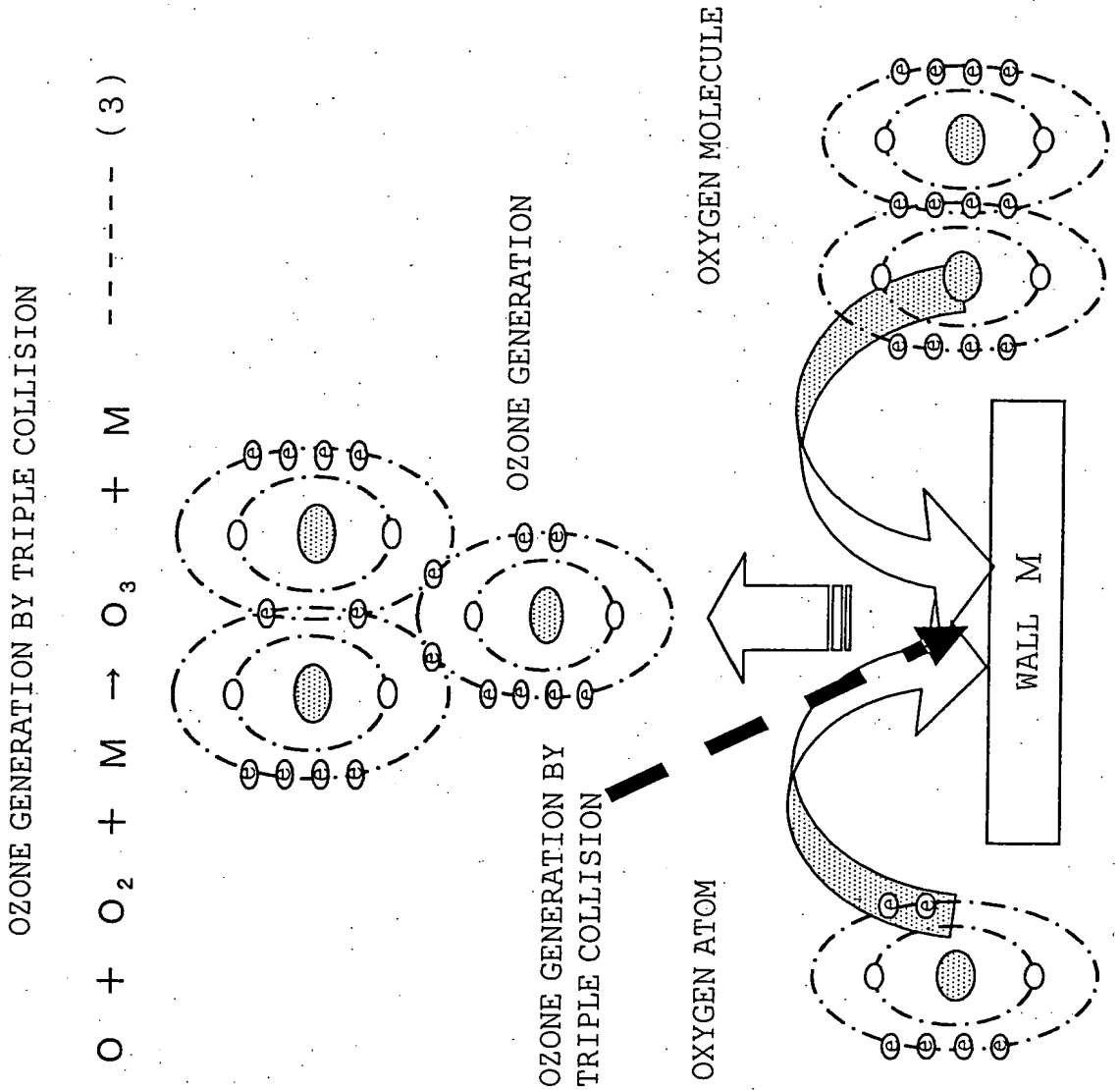


Fig. 5

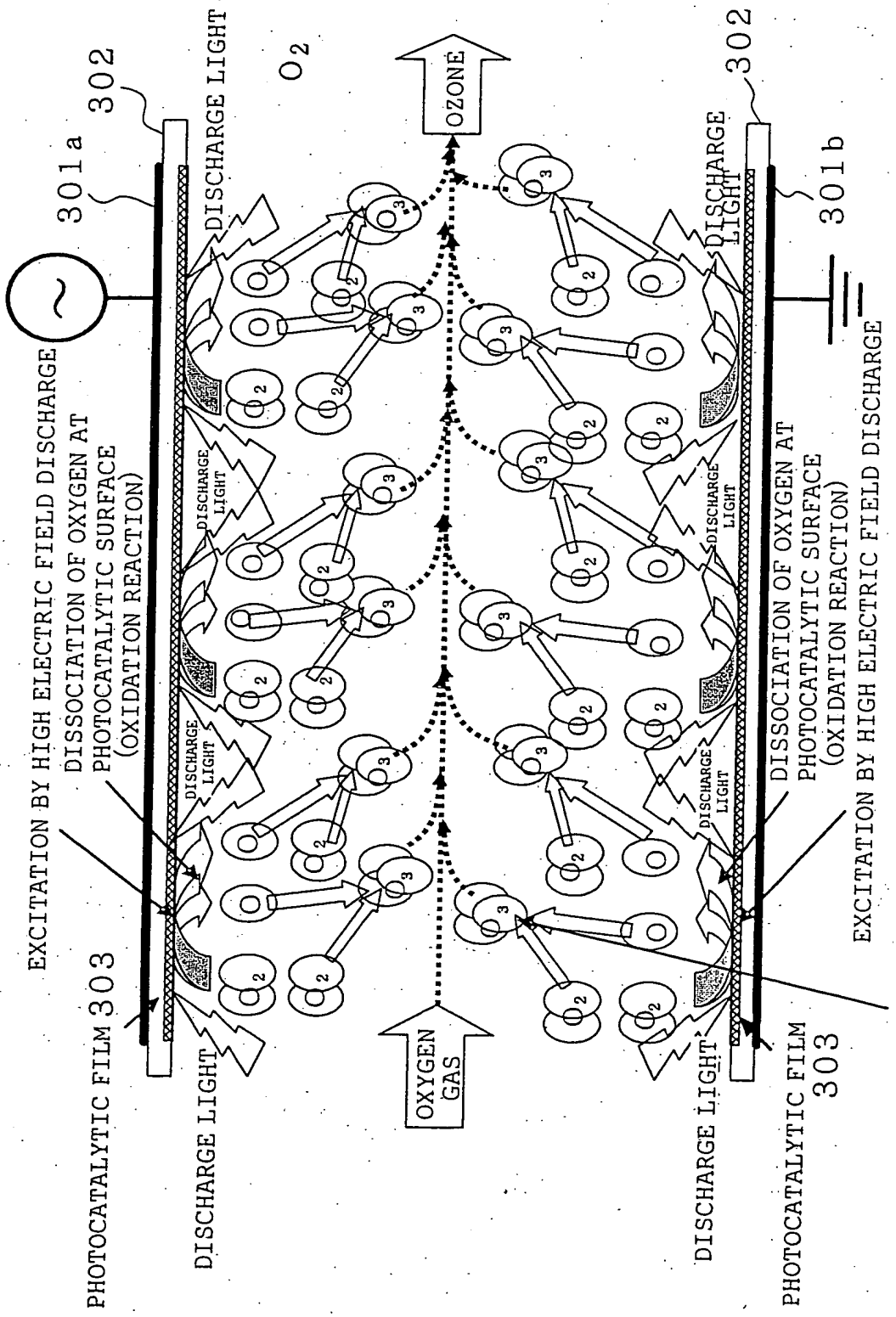

302
301a
DISCHARGE LIGHT
O_2
OZONE
DISCHARGE LIGHT
302
301b
EXCITATION BY HIGH ELECTRIC FIELD DISCHARGE
DISSOCIATION OF OXYGEN AT PHOTOCATALYTIC SURFACE (OXIDATION REACTION)
DISCHARGE LIGHT
DISCHARGE LIGHT
DISCHARGE LIGHT
DISCHARGE LIGHT
DISSOCIATION OF OXYGEN AT PHOTOCATALYTIC SURFACE (OXIDATION REACTION)
EXCITATION BY HIGH ELECTRIC FIELD DISCHARGE
PHOTOCATALYTIC FILM 303
DISCHARGE LIGHT
OXYGEN GAS
DISCHARGE LIGHT
PHOTOCATALYTIC FILM 303

Fig. 6

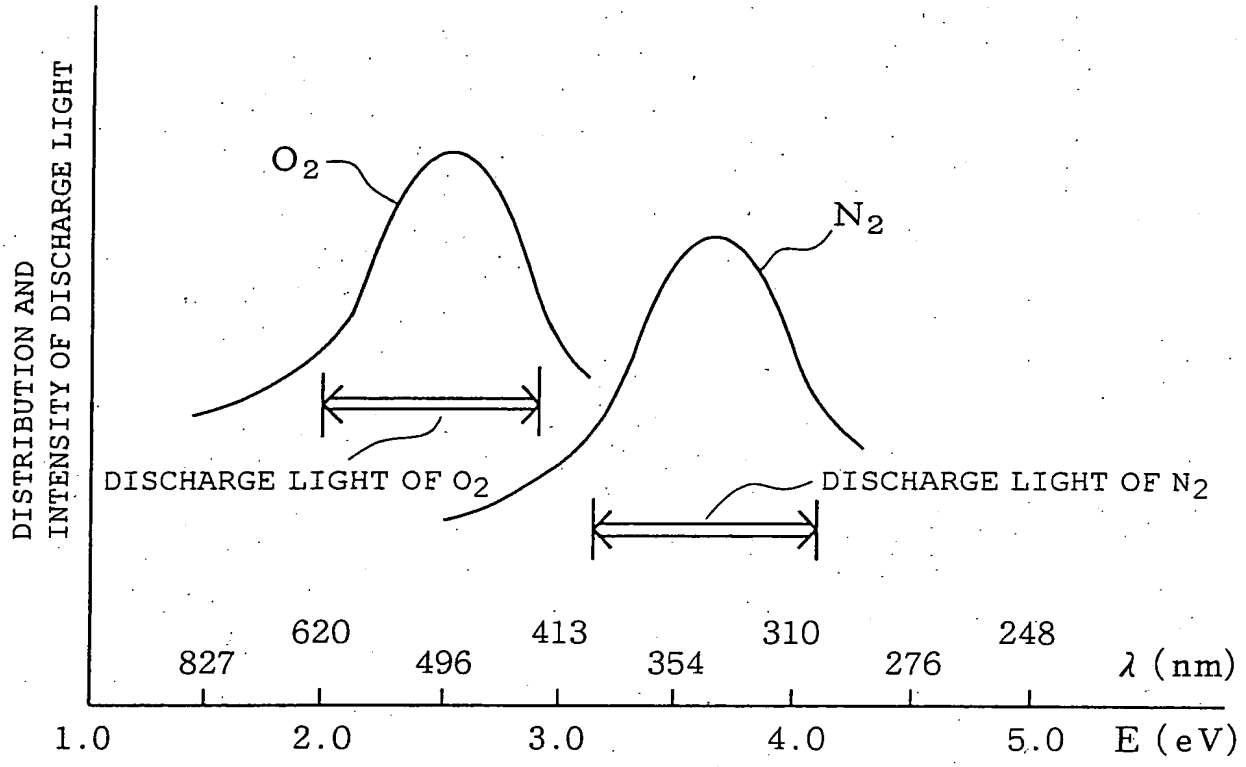

DISTRIBUTION AND INTENSITY OF DISCHARGE LIGHT
O_2
N_2
DISCHARGE LIGHT OF O_2
DISCHARGE LIGHT OF N_2
827
620
496
413
354
310
276
248
λ (nm)
1.0
2.0
3.0
4.0
5.0
E (eV)

Fig. 7

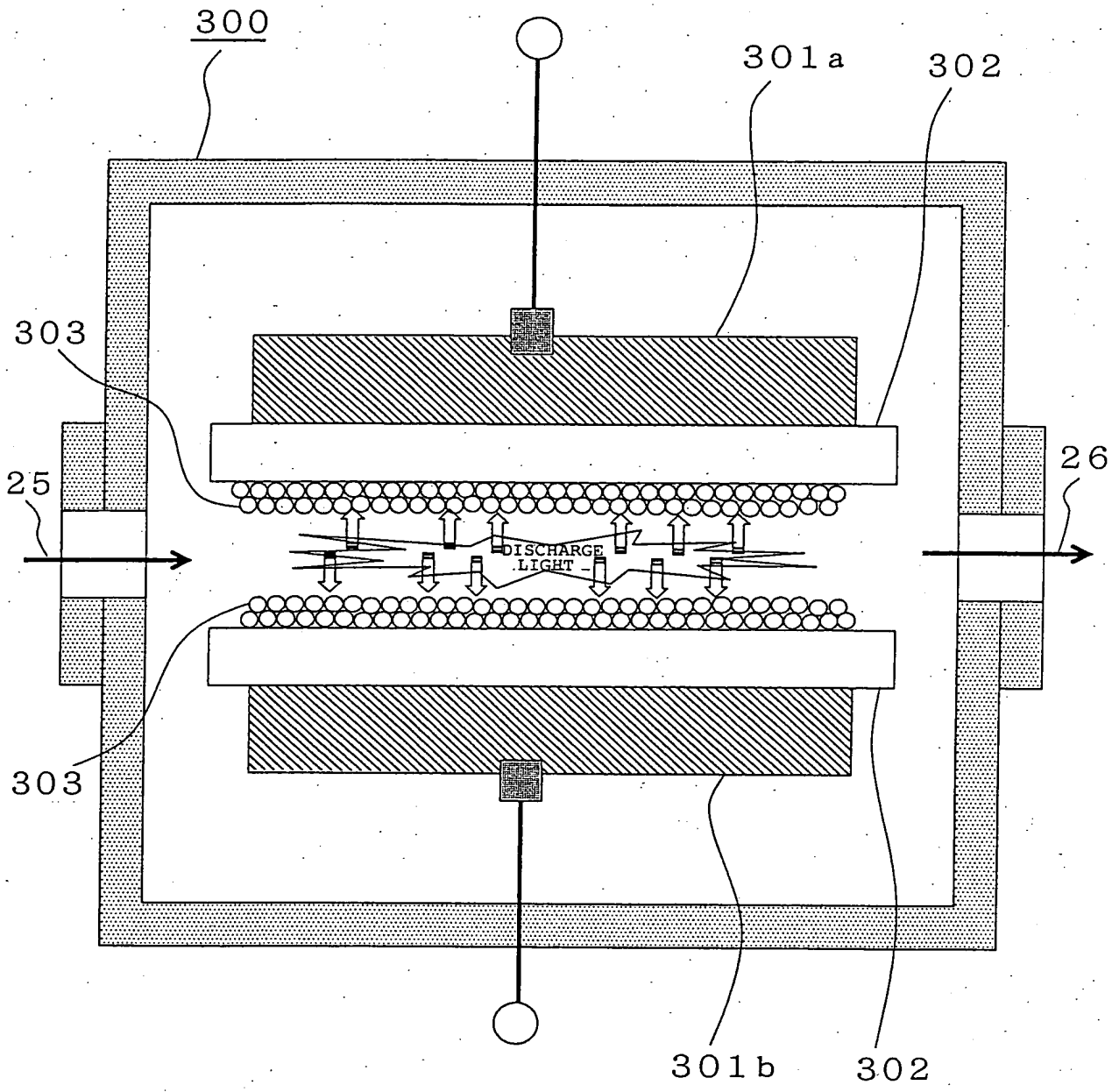
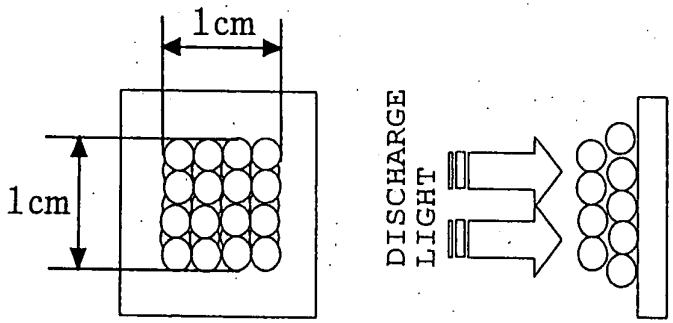


Fig. 8

CONTACT AREA BETWEEN PHOTOCATALYST AND LIGHT PER UNIT DISCHARGE AREA



FRONT VIEW　　SECTIONAL SCHEMATIC VIEW

DISCHARGE GAP : 0.1mm

750 cm^2

DISCHARGE GAP: 0.1mm
DISCHARGE AREA: 750 cm^2
DISCHARGE PRESSURE: 0.25MPa

POWDER PARTICLE DIAMETER OF PHOTOCATALYST: 2 μm

SURFACE AREA OF POWDER PARTICLE OF PHOTOCATALYST: 1.256E-07 cm^2

NUMBER OF POWDER PARTICLES OF PHOTOCATALYST PER ONE SIDE OF DISCHARGE AREA OF 1 cm^2: 10000

NUMBER OF POWDER PARTICLES OF PHOTOCATALYST PER DISCHARGE AREA OF 1 cm^2: 100000000

SURFACE AREA OF POWDER PARTICLE OF PHOTOCATALYST PER DISCHARGE AREA OF 1 cm^2: 4.14 cm^2

Fig. 9

Title: OZONE GENERATOR SYSTEM AND OZONE GENERATING METHOD
Inventors: TABATA et al.
Atty Docket No.: 403413
Leydig, Voit & Mayer 202-737-6770
10/538780

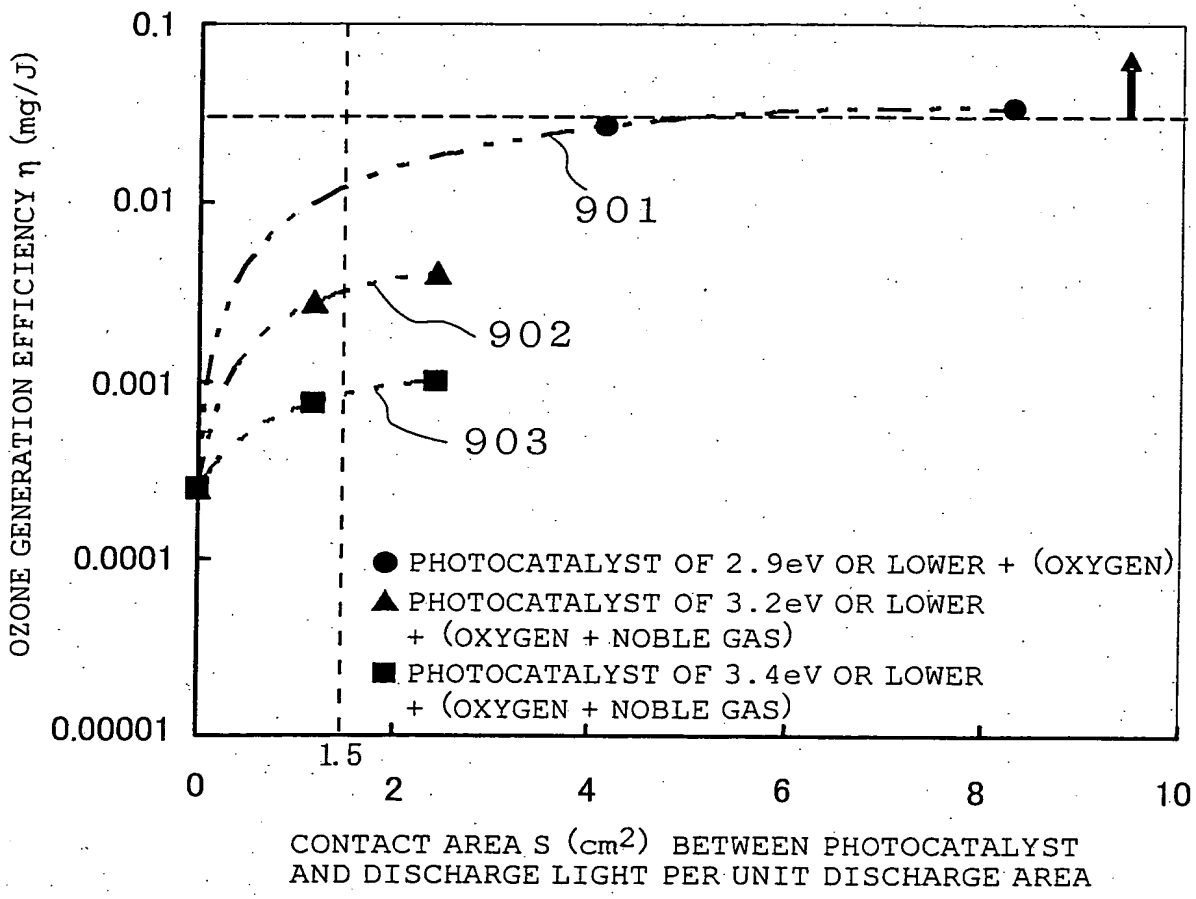

0.1
0.01
0.001
0.0001
0.00001
OZONE GENERATION EFFICIENCY η (mg/J)
901
902
903
PHOTOCATALYST OF 2.9eV OR LOWER + (OXYGEN)
PHOTOCATALYST OF 3.2eV OR LOWER + (OXYGEN + NOBLE GAS)
PHOTOCATALYST OF 3.4eV OR LOWER + (OXYGEN + NOBLE GAS)
1.5
0
2
4
6
8
10
CONTACT AREA S (cm2) BETWEEN PHOTOCATALYST AND DISCHARGE LIGHT PER UNIT DISCHARGE AREA

Fig. 10

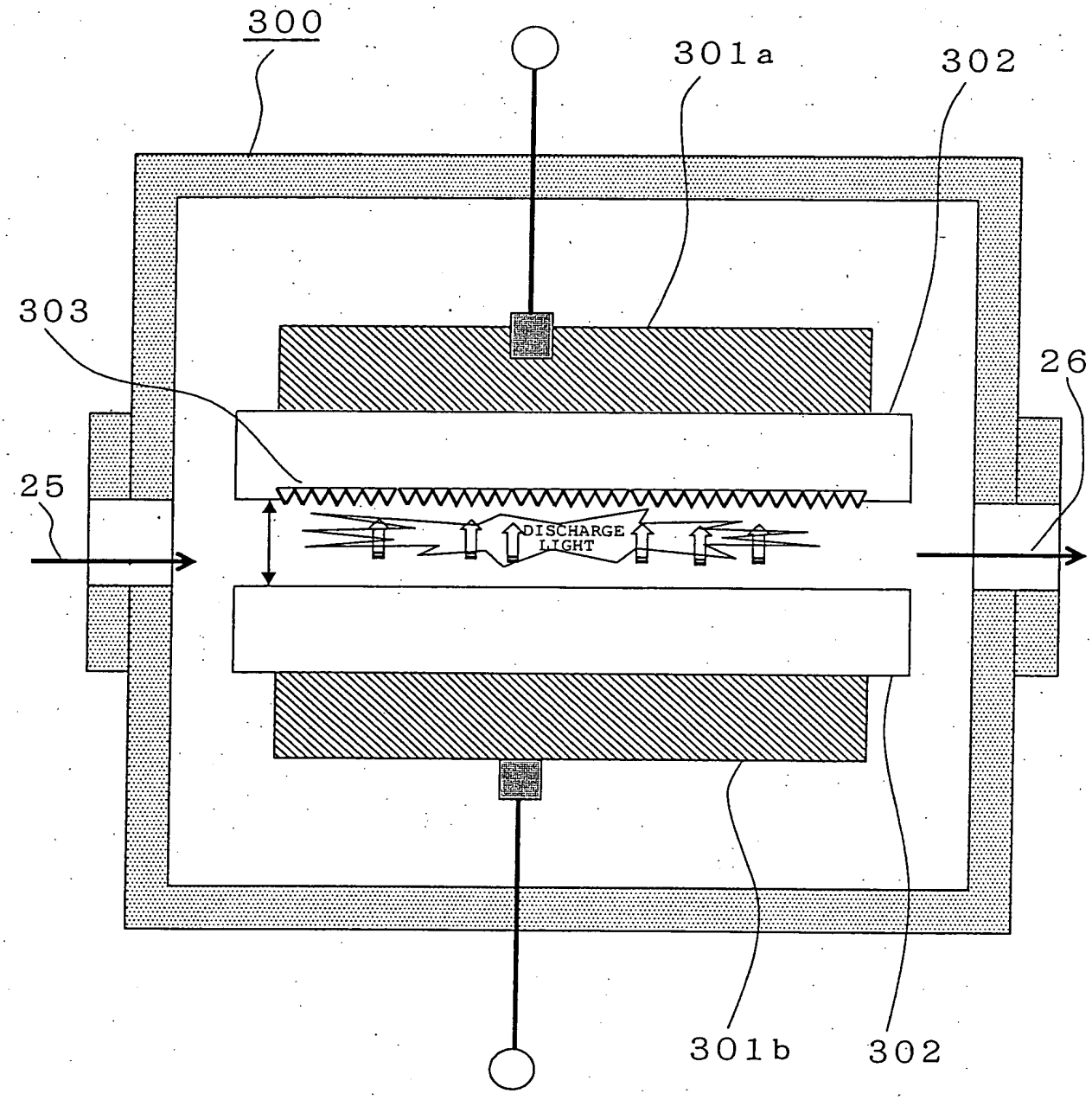


Fig. 11

10/538780

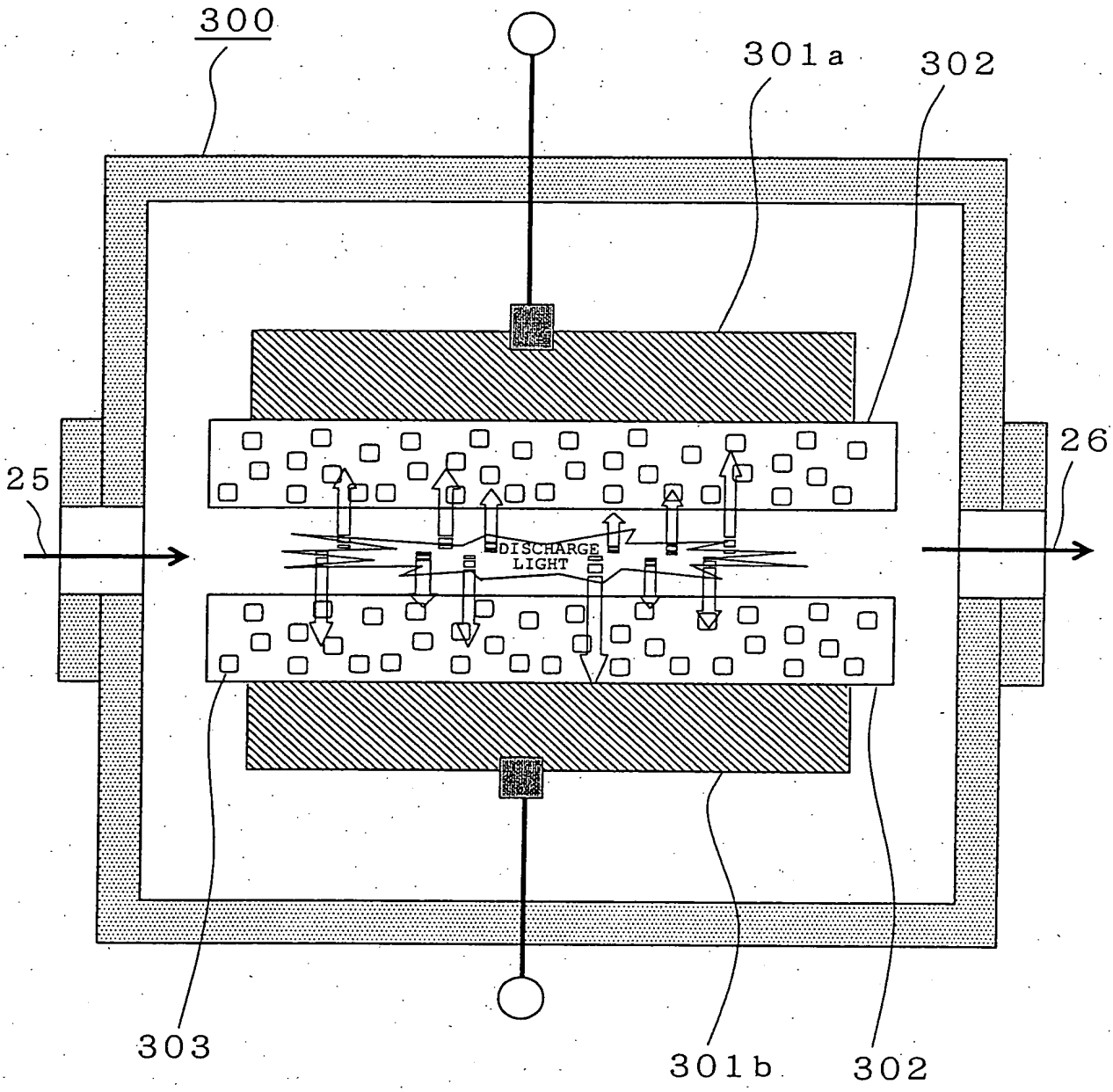


Fig. 12

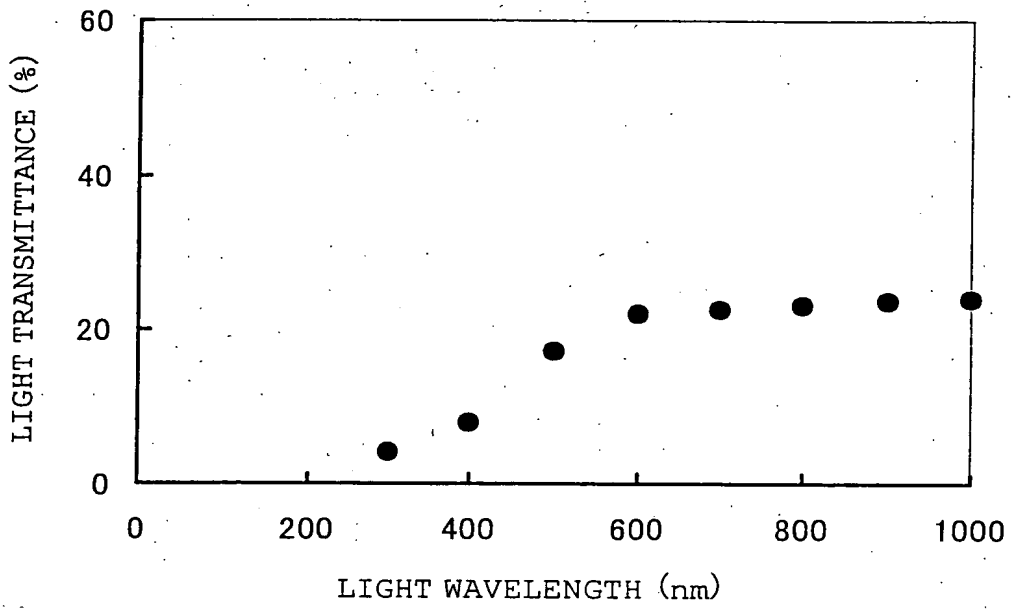

60
40
20
0
LIGHT TRANSMITTANCE (%)
0
200
400
600
800
1000
LIGHT WAVELENGTH (nm)

Fig. 13

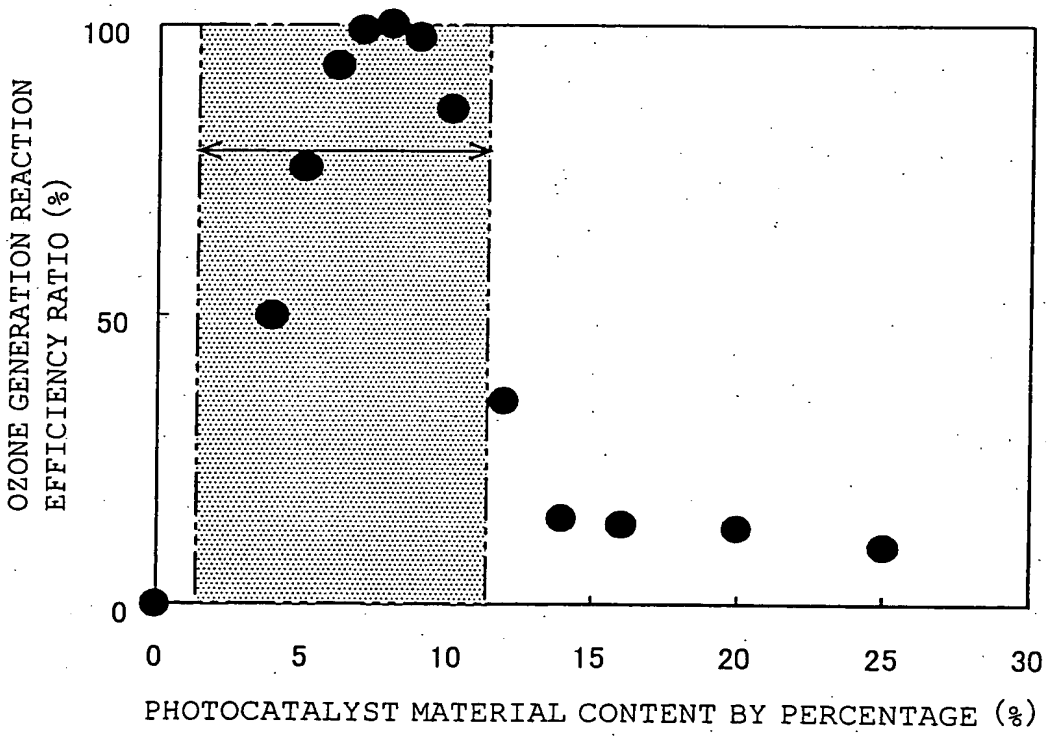

100
50
0
OZONE GENERATION REACTION EFFICIENCY RATIO (%)
0
5
10
15
20
25
30
PHOTOCATALYST MATERIAL CONTENT BY PERCENTAGE (%)

Fig. 14

10/538780

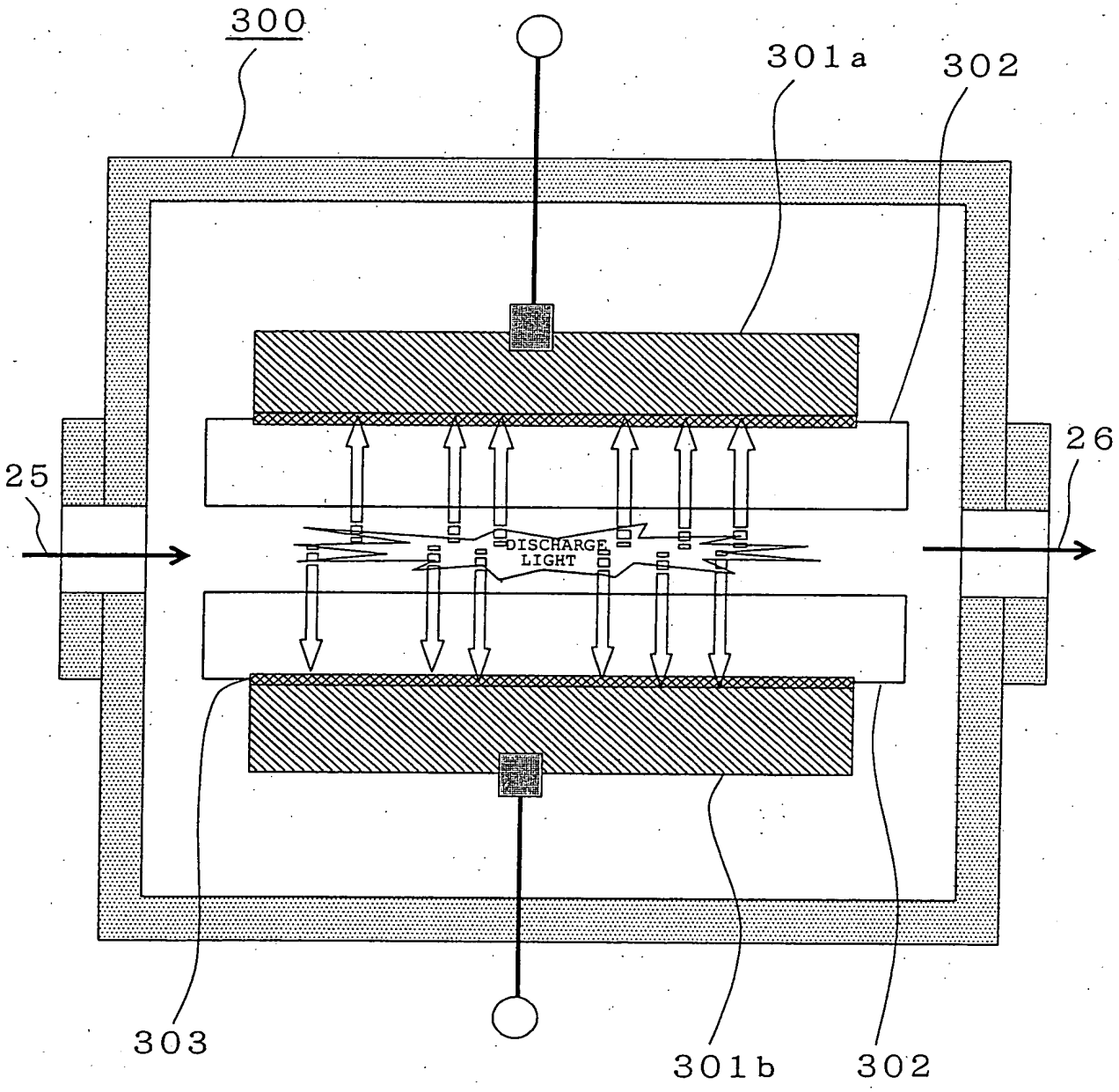


Fig. 15

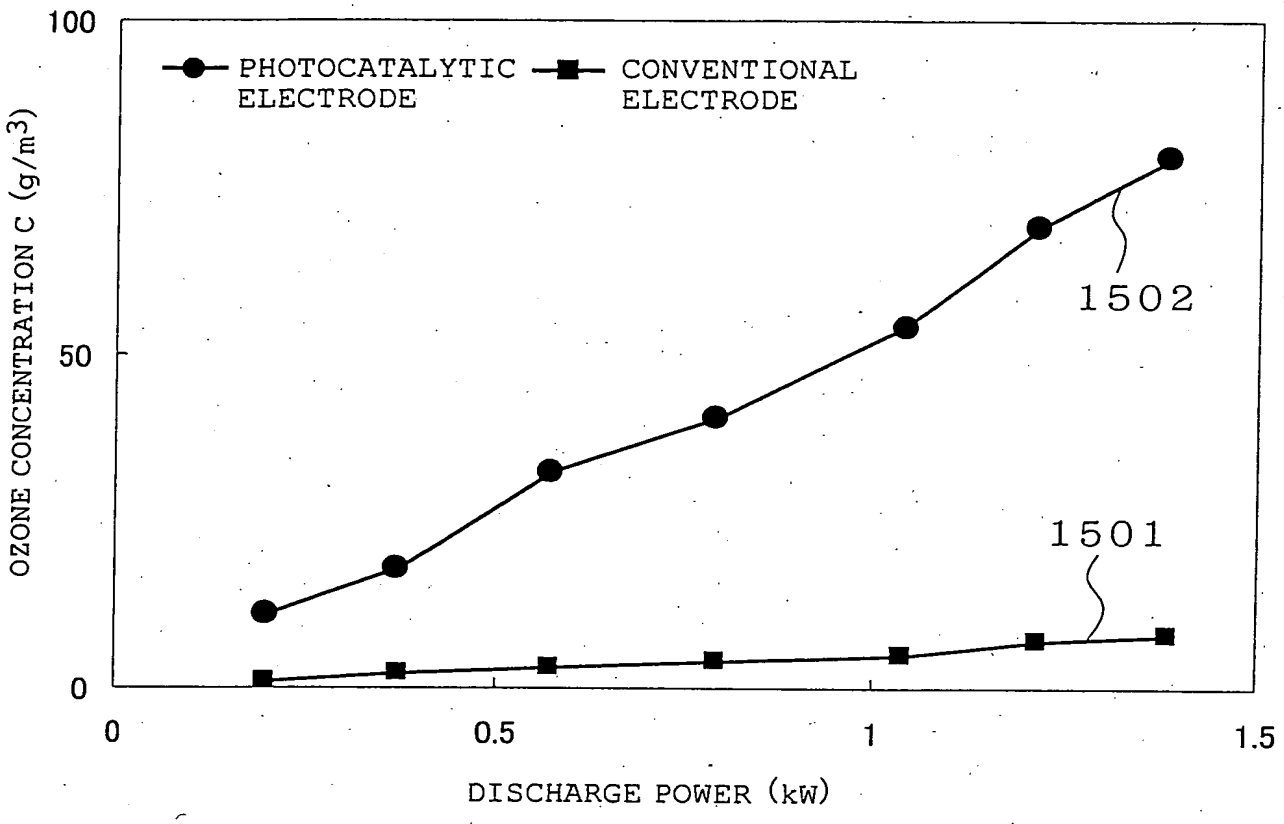

100
50
0
PHOTOCATALYTIC ELECTRODE
CONVENTIONAL ELECTRODE
1502
1501
OZONE CONCENTRATION C (g/m3)
0
0.5
1
1.5
DISCHARGE POWER (kW)

Fig. 16

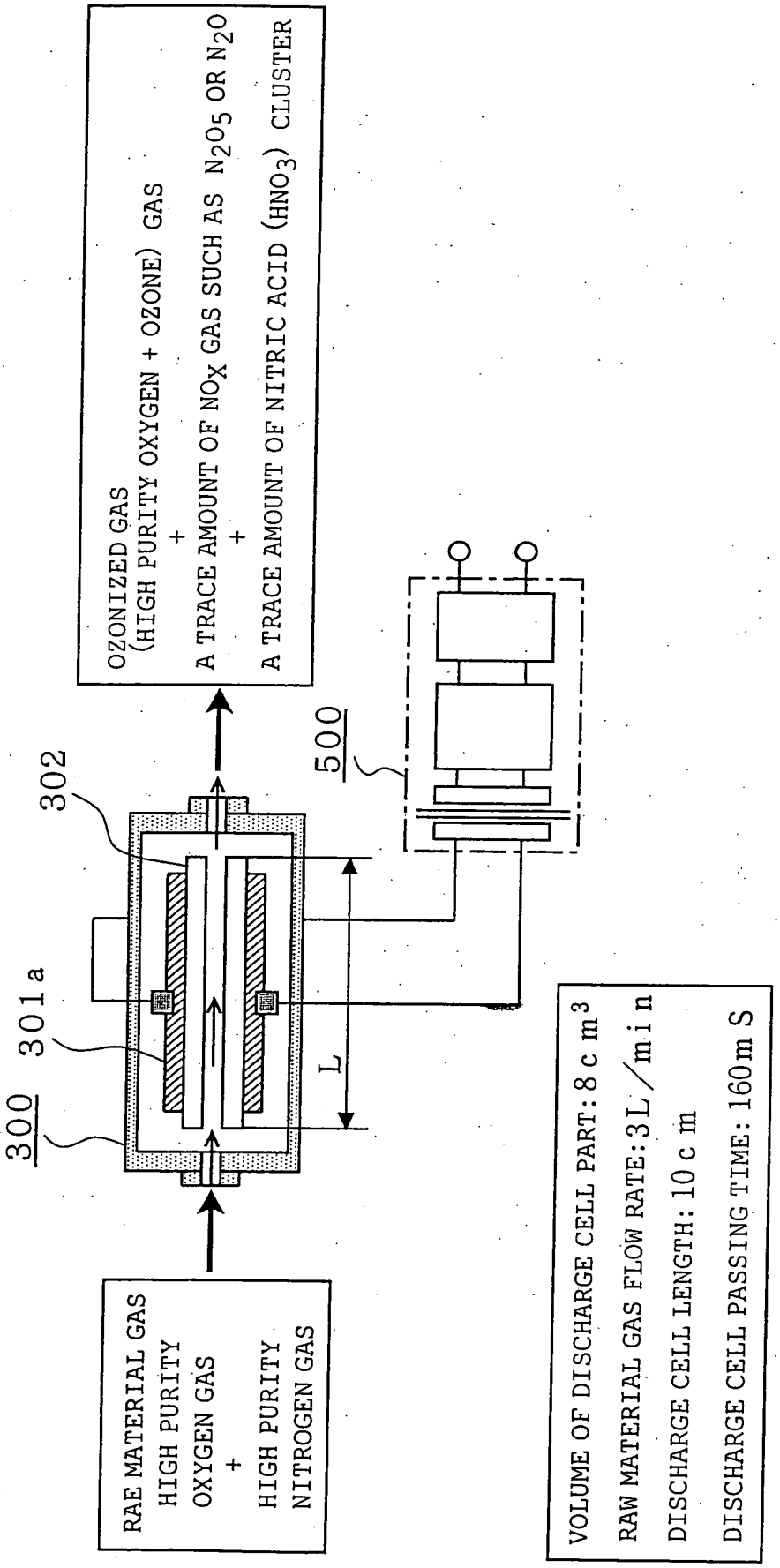

OZONIZED GAS
(HIGH PURITY OXYGEN + OZONE) GAS
+
A TRACE AMOUNT OF NO_X GAS SUCH AS N_2O_5 OR N_2O
+
A TRACE AMOUNT OF NITRIC ACID (HNO_3) CLUSTER
302
500
300
301a
L
RAE MATERIAL GAS
HIGH PURITY
OXYGEN GAS
+
HIGH PURITY
NITROGEN GAS
VOLUME OF DISCHARGE CELL PART: 8 c m^3
RAW MATERIAL GAS FLOW RATE: 3 L / m i n
DISCHARGE CELL LENGTH: 10 c m
DISCHARGE CELL PASSING TIME: 160 m S

Fig. 17

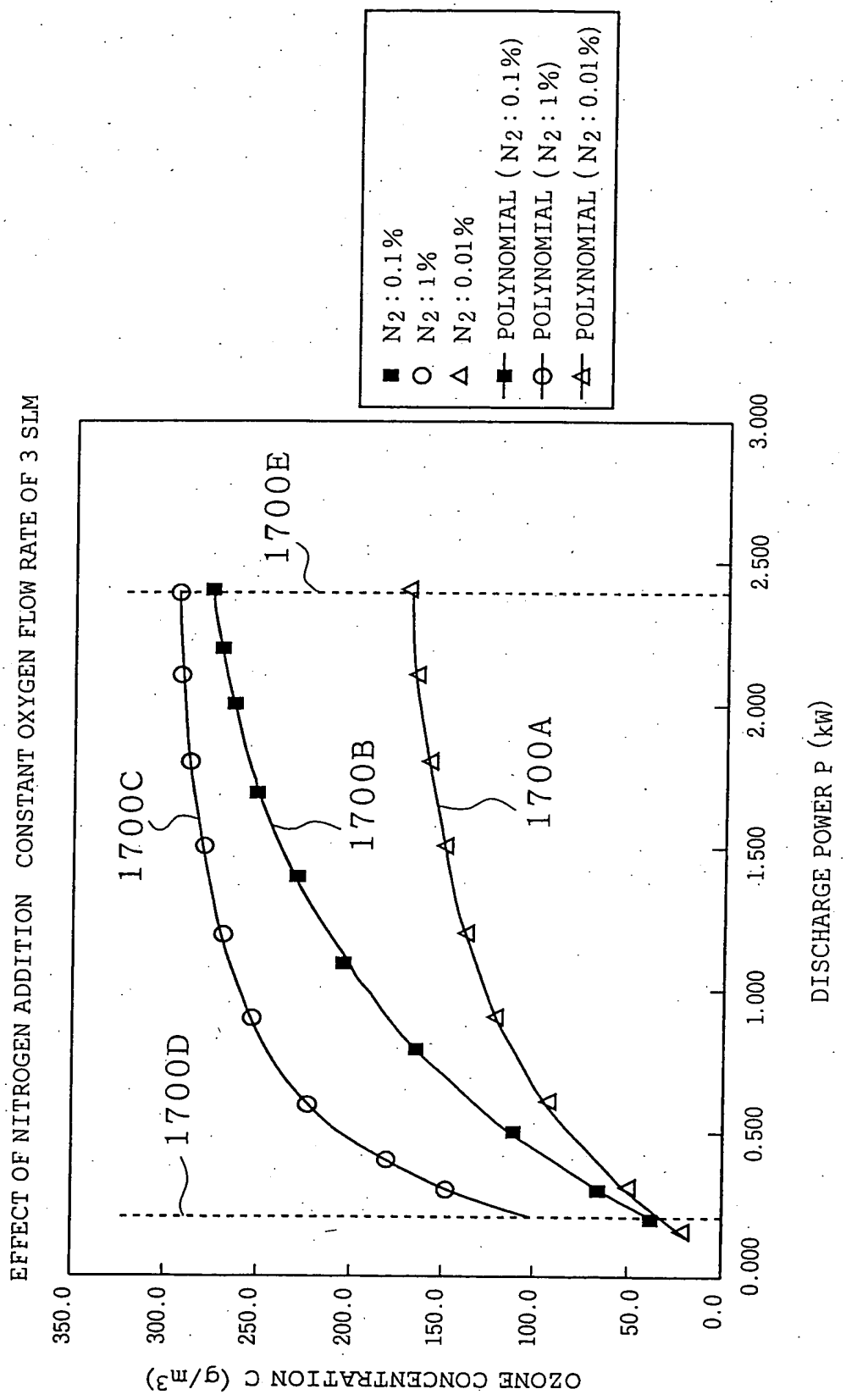

EFFECT OF NITROGEN ADDITION CONSTANT OXYGEN FLOW RATE OF 3 SLM
OZONE CONCENTRATION C (g/m3)
DISCHARGE POWER P (kW)
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
0.000
0.500
1.000
1.500
2.000
2.500
3.000
1700A
1700B
1700C
1700D
1700E
N2 : 0.1%
N2 : 1%
N2 : 0.01%
POLYNOMIAL (N2 : 0.1%)
POLYNOMIAL (N2 : 1%)
POLYNOMIAL (N2 : 0.01%)

Fig. 18

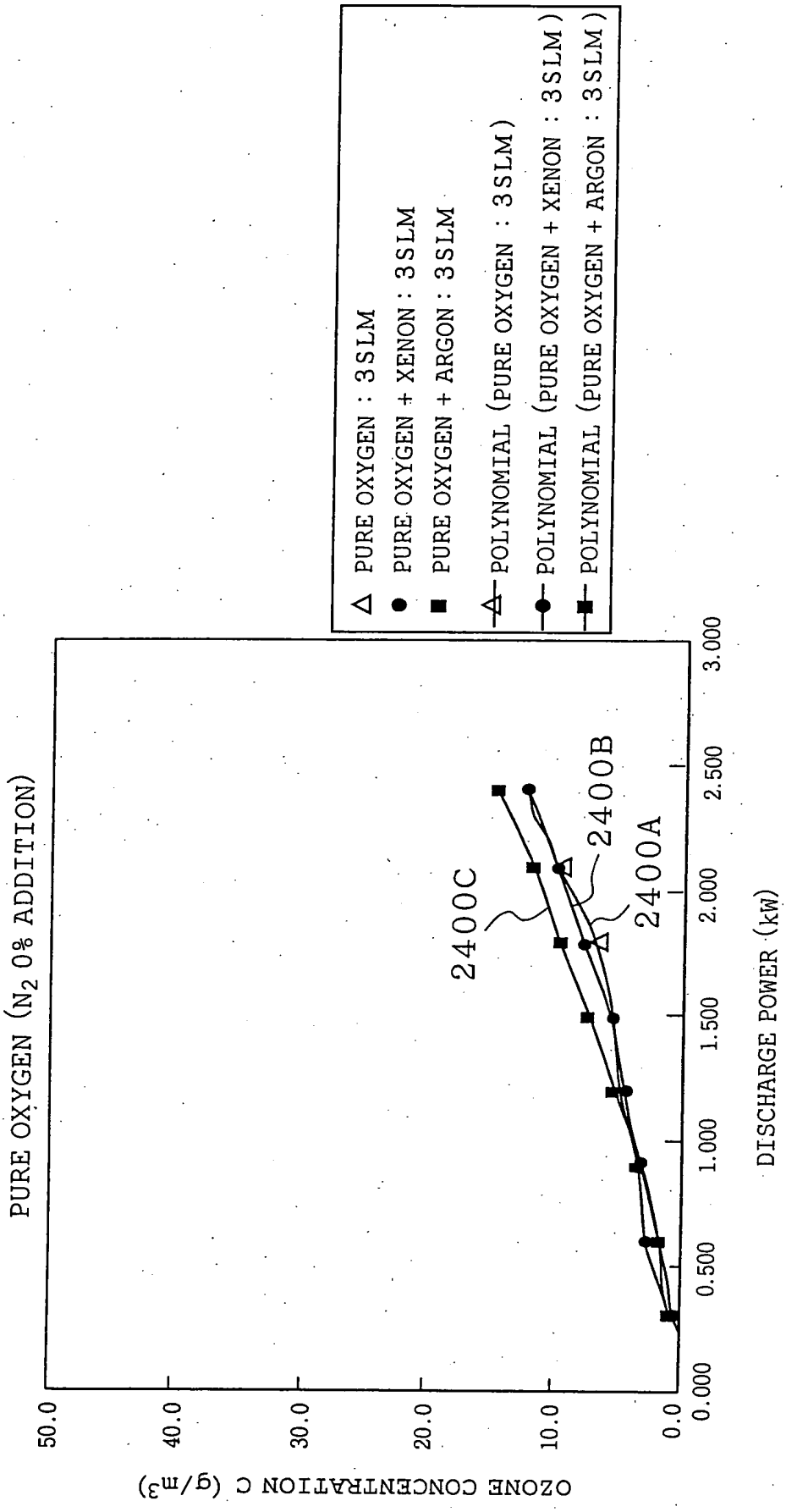

PURE OXYGEN : 3SLM
PURE OXYGEN + XENON : 3SLM
PURE OXYGEN + ARGON : 3SLM
POLYNOMIAL (PURE OXYGEN : 3SLM)
POLYNOMIAL (PURE OXYGEN + XENON : 3SLM)
POLYNOMIAL (PURE OXYGEN + ARGON : 3SLM)
2400C
2400B
2400A
PURE OXYGEN (N_2 0% ADDITION)
OZONE CONCENTRATION C (g/m3)
50.0
40.0
30.0
20.0
10.0
0.0
0.000
0.500
1.000
1.500
2.000
2.500
3.000
DISCHARGE POWER (kW)

Fig. 19

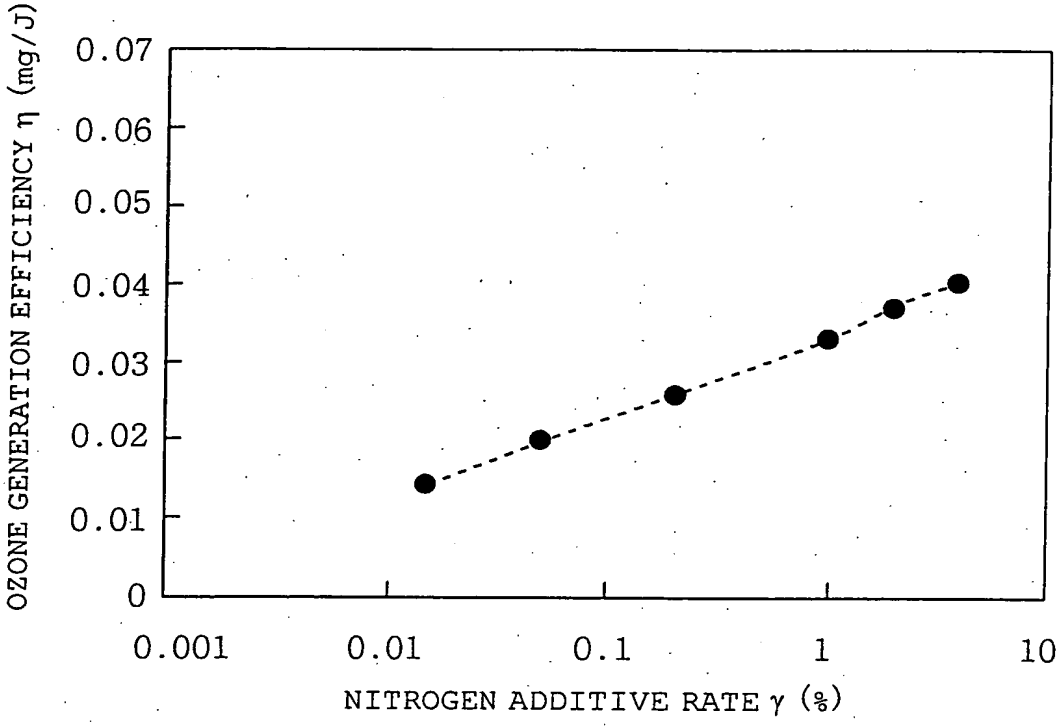

OZONE GENERATION EFFICIENCY η (mg/J)
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
0.001
0.01
0.1
1
10
NITROGEN ADDITIVE RATE γ (%)

Fig. 20

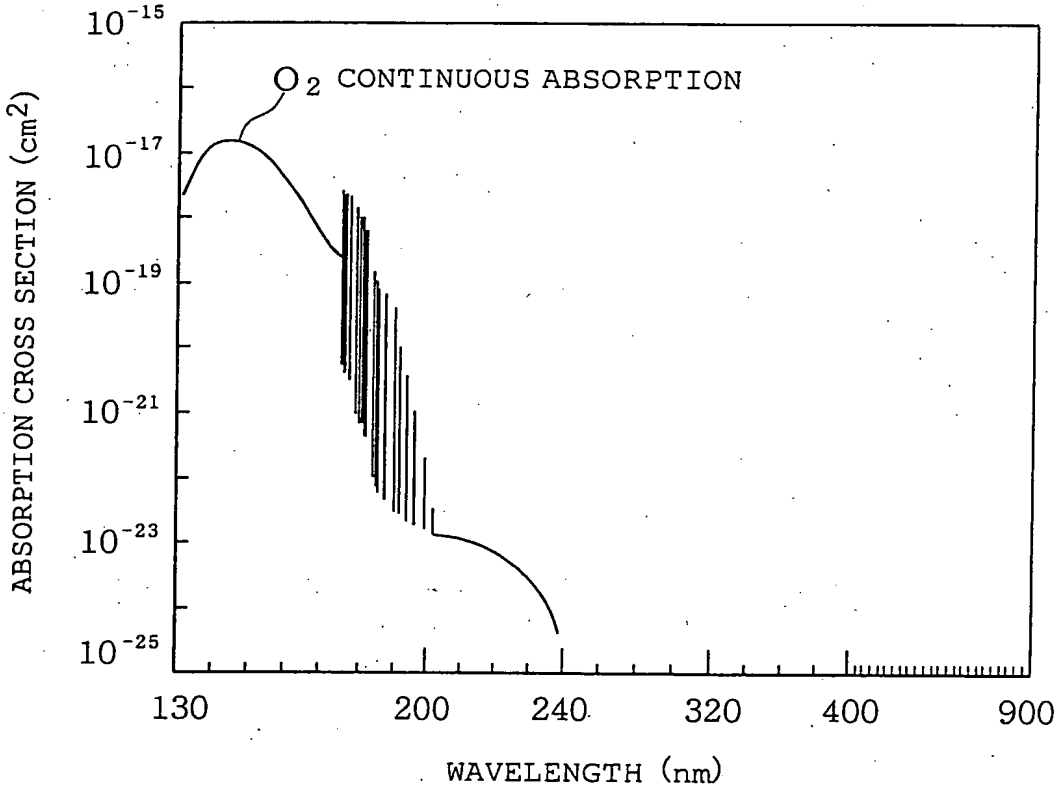

ABSORPTION CROSS SECTION (cm2)
10-15
10-17
10-19
10-21
10-23
10-25
O2 CONTINUOUS ABSORPTION
130
200
240
320
400
900
WAVELENGTH (nm)

Fig. 21

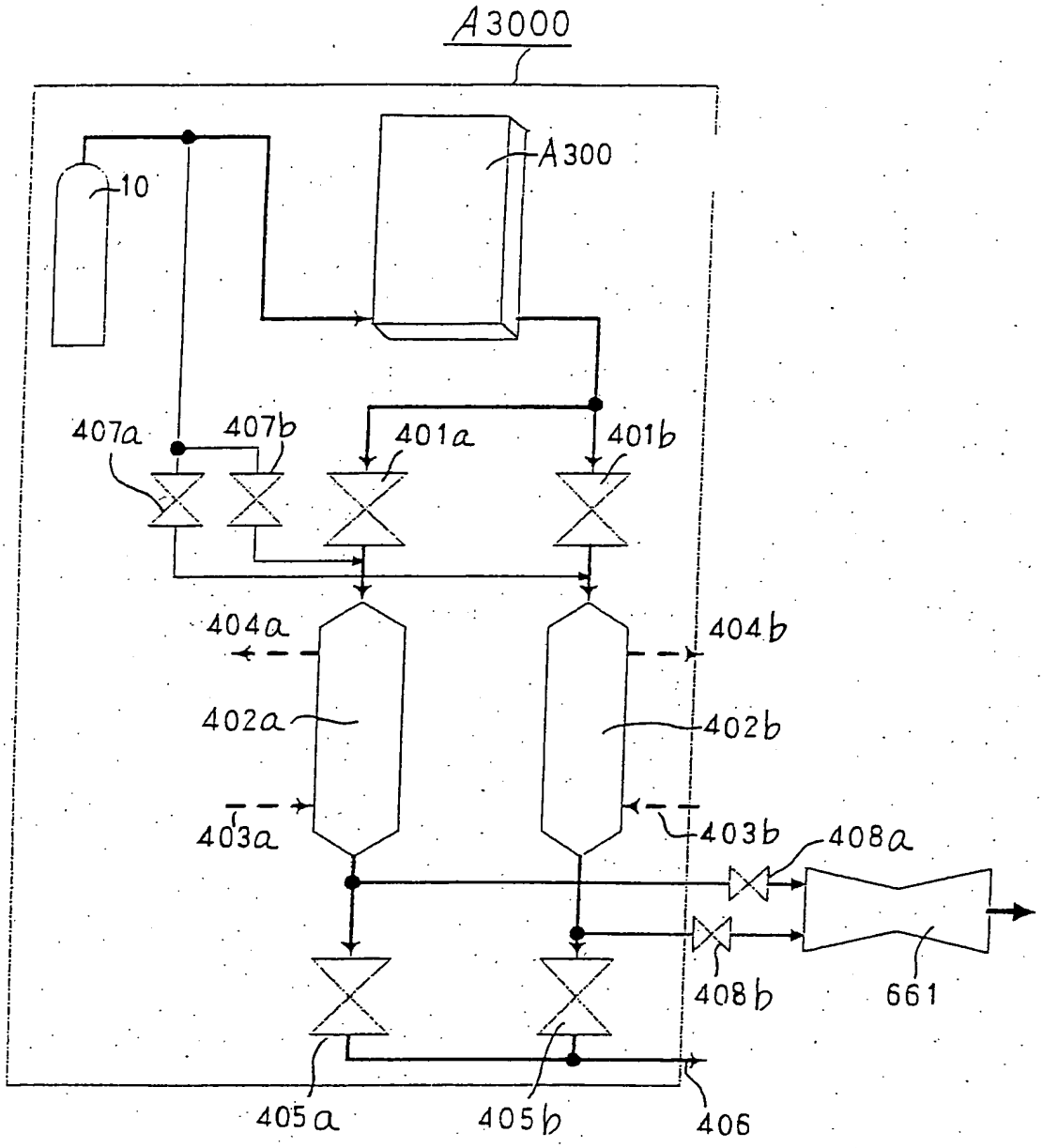

A3000
A300
10
407a
407b
401a
401b
404a
404b
402a
402b
403a
403b
408a
408b
661
405a
405b
406

Fig. 22

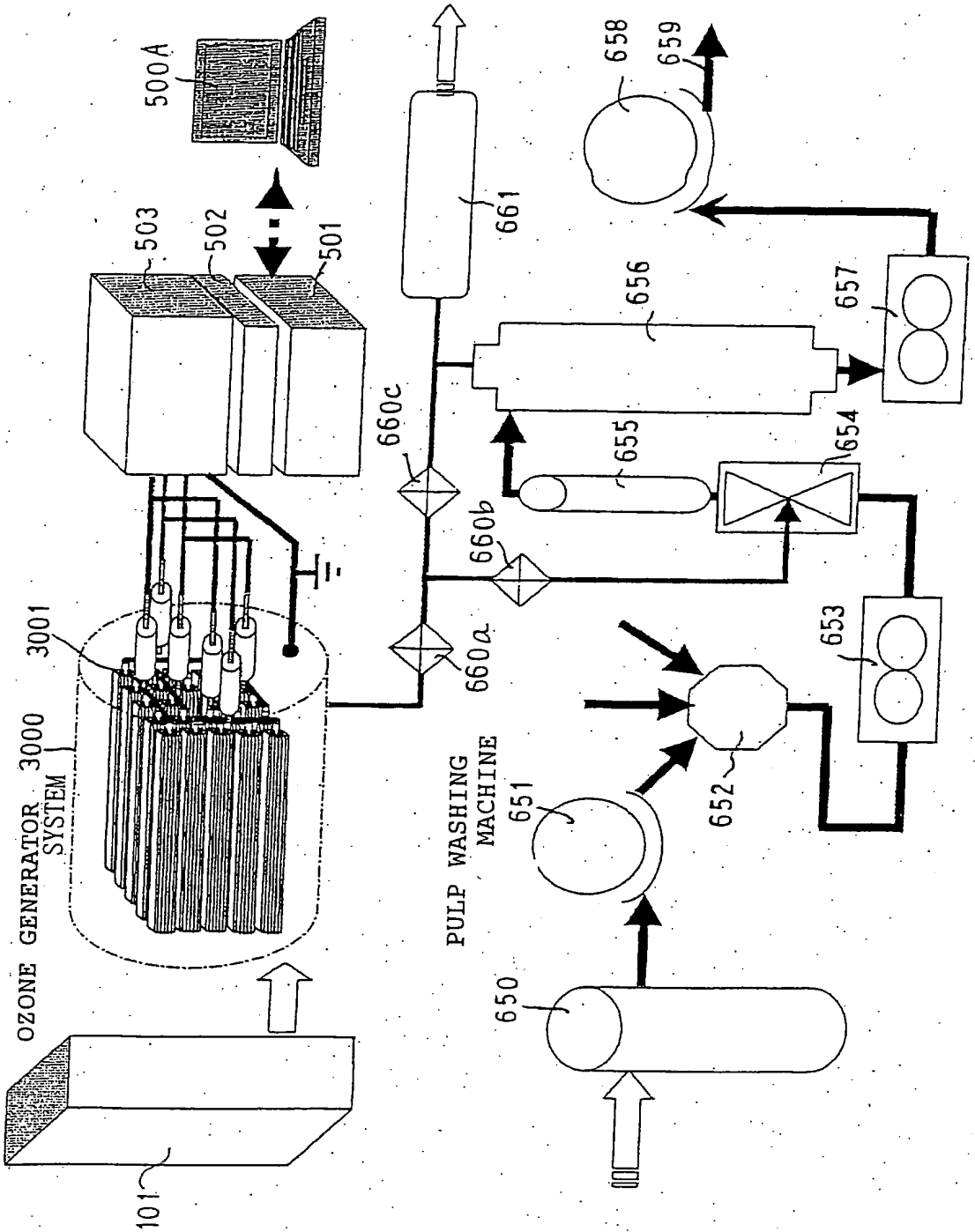

500A
503
502
501
661
658
659
656
657
660c
655
654
660b
660a
653
3001
3000
OZONE GENERATOR SYSTEM
PULP WASHING MACHINE
651
652
650
101

Fig. 23

10/538780

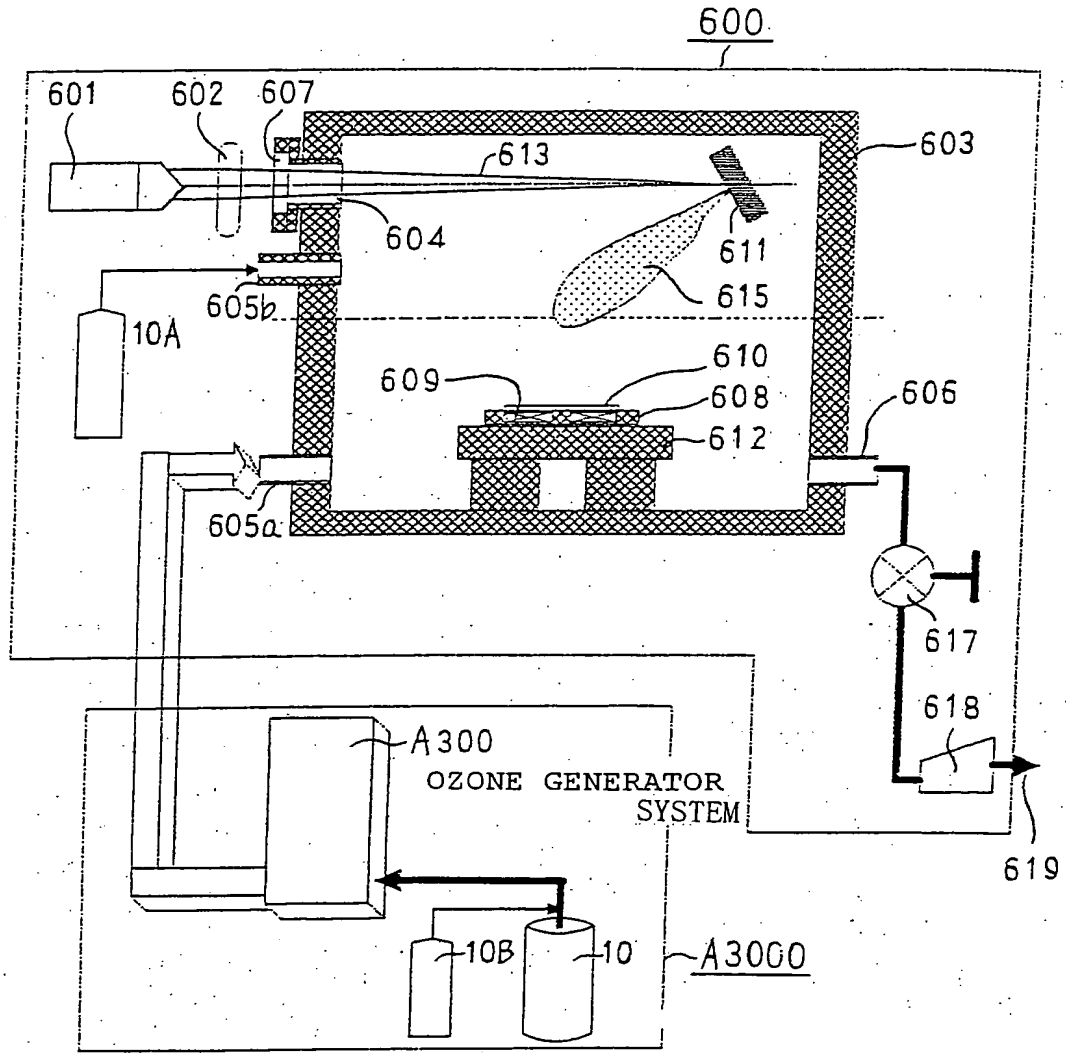


Fig. 24